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ABSTRACT

This policy paper explores the nature and significance of human capital development. Its intended audience includes policymakers, students and researchers, and citizens who bear the ultimate responsibility for public policy. An introductory section defines human capital broadly to include all productive capacities acquired at some cost and emphasizes the diversity of the processes that develop such capacities. The remainder of the paper focuses exclusively on educational and training processes that contribute to preparation for work. Section 2 is a descriptive inventory of the extent and nature of such processes. Four major categories of institutions that play a role in these processes are described: formal preschool programs, regular education, adult education and training, and federally financed employment and training programs. Section 3 reports the best available evidence on the effectiveness of four major systems of human capital development: Head Start, public primary and secondary education, federally financed employment and training programs for economically disadvantaged persons, and training for dislocated workers. Section 4 presents recommendations for public policy: increasing human resource flexibility, expanding compensatory preschool education, increasing the Federal role in primary and secondary education, expanding employment and training programs, and attaining efficiency and equity in social policy. Seven pages of references conclude the report. (YLB)

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DEVELOPING HUMAN CAPITAL

HERBERT S. PARNES
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U.S. DEPARTMENT OF EDUCATION
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FOREWORD

The purpose of this policy analysis is to examine factors and recommendations affecting one of the most fundamental resources in this country, human capital. Education and training programs are viewed as instruments for policy implementation. Evaluations of programs such as Head Start are the basis for recommended strategies for investing in people. The author sets forth his value orientations in bold relief for prescribing policy actions. The paper combines scholarship with a pragmatic optimism to recommend broadly based approaches to human capital development.

We are indebted to Dr. Herbert S. Parnes for an insightful treatment of fundamental and difficult issues. Dr. Parnes is Professor Emeritus of Economics, The Ohio State University, where he directed the National Longitudinal Surveys of Labor Market Experience in the Center for Human Resource Research for over a decade. He has written widely in the area of labor economics.

Dr. Anthony P. Carnevale, Chief Economist and Vice-President for Government Affairs, the American Society for Training and Development; Dr. David W. Stevens, Professor of Economics, University of Missouri at Columbia; and Drs. Kevin Hollenbeck and Hal Starr, Senior Research Specialists of the National Center for Research in Vocational Education, contributed to the development of this paper through their reviews of the manuscript. A special note of appreciation is extended to Donald and Marilyn Sanders and to Sandra Kerka for their valuable comments on draft copies of the work.

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Robert E. Taylor
Executive Director
The National Center for Research
in Vocational Education

EXECUTIVE SUMMARY

The purpose of this policy paper is to explore the nature and significance of human capital development. The author reviews and evaluates major education and training institutions and programs in the United States, and prescribes a number of directions for human capital development policy. It is intended for all who are, or should be, interested in thinking through the problem of developing the productive capabilities of the Nation's work force. This includes not only those directly responsible for the various aspects of human resource development policy, but also students and researchers in this field and citizens, who, in general, bear the ultimate responsibility for public policy.

Human capital refers to the productive capacities of women and men that are acquired at some cost (either to themselves or to society) and that command a price in the labor market. Like investments in physical capital, human capital investments can be evaluated by comparing the benefits they yield with their costs. However, because such "goods" as education and health are rarely acquired solely for the monetary returns they yield, benefit-cost analysis is a far less satisfactory evaluation technique for investments in human than in physical capital.

Human capital investment is expected to yield a return in the form of higher labor productivity; productivity gains are the principal source of improvement in per capita output and thus in the material well-being of the society. Attempts have been made to ascertain the contribution that education has made to the long-run upward trend in labor productivity. Although precise quantification is not possible, and whereas some have even denied any causal relationship between education and productivity, the most reasonable conclusion is that education has made a substantial contribution to the economic growth of the United States.

Among the education and training delivery systems evaluated in this paper are Head Start, primary and secondary education, secondary vocational education, and Federal employment and training programs. The Head Start program attempts to meet the educational, social, health, nutritional, and psychological needs of preschool children of low-income families. In contrast with early evaluations of the program, more recent research has documented long-term beneficial results of early childhood intervention programs and Head Start in particular. Specifically, Head Start programs have been shown to produce positive effects on the cognitive, social, and emotional development of children, on their health, on the quality of parent-child relationships, and even on the extent and character of educational and social services offered in the community.

A number of commission or task force reports appearing in 1983, especially that of the National Commission on Excellence in Education, have focused National attention on serious qualitative deficiencies in public primary and secondary education in the United States and have generated considerable interest in reform. One of the most fundamental needs is to upgrade teaching in elementary and secondary schools, but there is disagreement about how this can best be achieved. More radical proposals for change, such as tuition tax credits and voucher systems, would rely on market forces to promote improvement in public education. Critics of these market approaches argue that they would lead to greater inequality of educational opportunity. These

approaches would encourage flight from the public schools of precisely those families who are sufficiently concerned and active to press for reform.

The vocational curriculum at the secondary level is ostensibly the most relevant to preparation for employment, and a number of studies have attempted to assess its effectiveness. Most of these have found little evidence of the general superiority of the vocational as compared with the general curriculum. However, two very recent studies (Campbell and Basinger 1985; Hotchkiss, Kang, and Bishop 1984) have produced clearer justification for the vocational education curriculum. Although it is too early for a confident judgment, research currently under way at the National Center for Research in Vocational Education will most likely allow a more definitive conclusion on the issue.

A variety of verdicts have been rendered on the effectiveness and utility of Federal employment and training programs. There seems to be little question that training programs in general have had beneficial effects, especially for women, and that carefully designed programs for special groups can be particularly effective, with the Job Corps being a notable example. Changes made by the Job Training Partnership Act are too recent to allow their effectiveness to be evaluated, although there is some reason to fear that the new program does not give as much attention as its predecessor to those most in need of rehabilitation.

The broad analytical conclusion of this paper is that education and training can and do make substantial contributions to the welfare of individuals and to society's ability to accomplish its objectives. The prescriptions for human resource development policy presented here are based upon the following value judgments:

- All who want to work should be guaranteed an appropriate job.
- There should be lifelong opportunities to prepare for occupational roles.
- Education and training opportunities should depend only on an individual's ability and motivation.
- There should be the widest possible freedom of choice in the labor market.

Policy can be improved by finding out what works. Although choices among competing investments in human capital will have to be made politically rather than scientifically, the scientific method *is* relevant to discovering the best method of achieving a particular objective through the process of "systematic experimentation" (Rivlin 1975).

The educational system should concentrate on building foundations for skill acquisition that will subsequently occur in the workplace. This means that schools should give increased attention to developing communication and computational skills, a basic understanding of the scientific method and of the elementary principles of natural and social science, and creative problem-solving ability in all students.

There is clear evidence that Head Start contributes to the academic success as well as the health, emotional maturity, and family life of the participants. However, at present levels of funding, Head Start can accommodate only a small minority of the children who are eligible for it. Expansion of compensatory preschool education would lead to the salvaging of human resources that otherwise would be lost or less adequately utilized.

To enhance the quality of public education, policies must be pursued that will attract and retain competent teachers and that will weed out the incompetent. These policies include an increased level of pay, forgivable loans covering college expenses to talented individuals who enter the profession, salary differentials based on merit, nationally standardized tests for admission to the profession, and periodic examinations for retention of certification—accompanied by opportunities for remediation and by reemployment programs for those forced out of teaching. In addition to strengthening teaching, the recommendations for curriculum reform made by the National Commission on Excellence in Education should be implemented as quickly as possible.

The Federal role in primary and secondary education should be expanded for at least three reasons:

- The necessary reforms are costly, and it is doubtful that States and communities will be uniformly able and willing to implement them.
- Aside from cost, Federal standards are necessary if there is to be any uniformity among the States.
- For any given level of excellence, it would be desirable to reduce current disparities among school districts and States in the resources devoted to education.

Moreover, the philosophical proposition that education is the natural province of communities and States rather than of the Federal Government is without merit. A strong National interest in education stems from the National objectives—for example, defense—to which education is relevant; moreover, the extensive geographic mobility of the population means that one's next-door neighbor may well be the product of the educational system of another community or State. Both of these considerations mean that the educational system of each community is of potential importance to the citizens of every other community.

No matter how effective the formal educational system may become, employment and training programs will always be needed as remedial instruments and as a means of training "mainstream" workers whose skills have become obsolete. Because the need is far greater than current levels of funding can accommodate, such programs should be expanded.

Although efficiency and equity are frequently competing objectives of social policy in the sense that we can have more of one only at the expense of some of the others (Okun 1975), they do not inevitably collide. The policy directions suggested here are especially appealing because they will not only contribute to a more dynamic economy, but also will reinforce a trend begun at least half a century ago but interrupted during the past 5 years—toward a more humane and equitable society.

INTRODUCTION

Abilities, knowledge, and mental and physical well-being impose the ultimate limits on what an individual can accomplish; the same qualities of its people collectively are an important determinant of the potential of a nation. Thus, the acquisition of knowledge and skills and the attainment and preservation of physical and mental well-being are crucially important processes from the perspectives of both the individual and the society. This is a simple idea, yet a profound one—an idea that commands universal agreement in the abstract, yet whose implementation inspires heated debates. Its exploration and elaboration are the mission of this paper.

This introductory section explores the meaning and significance of human capital—the term economists have given to the aforementioned kinds of productive capabilities—and analyzes several demographic and economic trends that are thought by some to impinge upon human capital development policies. Sections 2 and 3 describe and evaluate selected categories of education and training programs as instruments of human capital development. Section 4 presents recommendations for public policy.

The paper is intended for all who are—or should be—interested in thinking through the problem of developing the productive capabilities of the Nation's work force. It is hoped that the paper will be of value not only to those at the Federal, State, and local levels who are directly responsible for the various aspects of human resource development policy, but also to students and researchers in this field and to citizens, who, in general, bear the ultimate responsibility for public policy.

Human Capital and Human Resources

Human capital and human resources are two related but nevertheless distinct concepts. The former refers to the productive capabilities of human beings that are acquired at some cost and that command a price in the labor market because they are useful in producing goods and services. The term human resources, on the other hand, refers to human beings themselves, but viewed narrowly in their roles as producers or potential producers of goods and services—the agents in which human capital is or can be incorporated (Parnes 1984).

However useful it may sometimes be to see men and women as mere instruments of production, this clearly is a limited view, for it ignores the fact that workers are also the ends for whom all production takes place. Such a view also ignores their other important roles: as spouses, parents, members of a community, citizens of a nation and of the world, and, above all, as thinking, feeling entities whose self-fulfillment is important in its own right. To define human resources in terms of production roles, therefore, is by no means to suggest that men and women are merely—or even primarily—productive agents. Such a definition does emphasize, however, that the production-related roles of individuals are important both to the individuals themselves and to society, and that how well individuals perform as producers may condition their performance in other important roles. One does not live by bread alone, but neither is success in other spheres likely without an

adequate income, which generally depends upon success as a producer. Moreover, productive activity contributes to self-fulfillment not only through income, but also through the self-expression that it affords.

That human capital development conditions the way in which individuals perform their non-productive roles is clear; the converse is perhaps less obvious. Roles outside the labor market affect the process of human capital development. As parents, men and women have profound effects on human capital formation in their children, depending upon how they spend their time together. As citizens, they help to make collective decisions relating to a variety of public investments in human capital, including public education. These interconnections have a very important implication for educational policy: education for the world of work, education for citizenship, and education for self-fulfillment turn out to be not nearly so separable as they might at first appear. That is, even if a society were exclusively interested in the self-fulfillment of its members, it would need to pay attention to their preparation for work; even if a society were to be solely concerned with economic development and growth, it could not safely ignore preparation of its members for citizenship and parenthood.

Human Capital and Physical Capital

Economists have a way of thinking about human capital that many of them believe is useful for deciding how much and what kinds of productive capabilities individuals and societies ought to develop. In order to understand this system of thought, it is useful to begin with an examination of the similarities and differences between human and physical capital.

The term *capital* is generally used by economists to refer to produced goods that are to be used in the process of further production—for example, a factory building and the machinery in it or a retail store and its inventories that have yet to be brought into the hands of a customer before they can be used to satisfy human wants. The process of creating capital is known technically as investment. This is obviously costly, in the sense that resources required to produce the capital could have been put to uses more immediately related to satisfying wants for goods and services. The reason that individuals and societies invest in capital, then, is that such capital is productive; that is, the quantity of the ultimate product—shoes, let us say—is sufficiently greater than it would have been if produced by hand to justify the cost of acquiring the capital. Thus, whether a particular capital investment is worthwhile depends on whether the benefits that flow from it—that is, the increased product attributable to the investment—is worth at least as much as the cost of making it.

The parallels between human and other forms of capital are fairly clear-cut and were perceptible as early as 1776 to Adam Smith, although it has been only in the past quarter century that economists have rediscovered them (Schultz 1961). First of all, the acquisition of skills, like other forms of capital investment, is a costly process in the sense that it uses resources—including the time of the individual acquiring the skills—that could be used in other ways. Formal education is perhaps the most obvious example, where the real costs are the building, equipment, and materials devoted to the process as well as the services of teachers and other school employees and the foregone earnings of the students. As a more subtle example, a parent reading to a child is also investing in human capital to the extent that the activity makes an indirect contribution to the ultimate work skills of the child. The cost includes the use of the book as well as the parent's time.

A second similarity between investments in human and physical capital is that the former, like the latter, are generally motivated at least in part by a desire to improve productivity; to the extent

that such investments are successful, their costs can be more than compensated by the greater return that the capital makes possible. Third, both types of capital investment may be either private or public, and each may be evaluated from either an individual or a societal perspective. In the case of physical capital, just as an entrepreneur may invest in a factory building, so may a community invest in a subway; in the case of human capital, there can likewise be both individual investments in skill acquisition or collective investments by society in various forms of education and training of its citizens.

Despite their similarities, human and physical capital differ in several important respects. Perhaps the most important difference is that because some portion of skill acquisition is incidental to consumption—that is, is enjoyable in its own right—not all of its cost can be considered an investment. Education is pursued not only to enhance productivity but because it is entertaining or satisfying in its own right or because it may serve to enhance the quality of one's life in future years. Thus, whereas profit is generally the exclusive motive in a business investment in a factory, the costs and the benefits of an education are more ambiguous. If the benefit is to be defined as increased earnings, the problem arises of determining what part of the total costs represented true investment (that is, what part was undertaken purely to increase earnings) and what part represented consumption. This, of course, is not easily done. Alternatively, if one decides to ignore the distinction in costs and to include among the benefits the value of consumption as well as the increased earnings, there is the equally intractable problem of assigning a monetary value to the consumption benefits. In short, the evaluation of the worthwhileness of an investment in human capital is generally far less straightforward than the analogous evaluation of an investment in physical capital. Indeed, an argument can be made that the exercise—especially as a means of making social evaluations—is largely futile (Parnes 1984).

A second difference between human and physical capital is that, in the absence of slavery, human capital cannot be owned by anyone except the individual in whom it resides. This complicates the financing of human capital investment for the individual because loans for that purpose cannot be secured by a mortgage on the capital as they can in the case of a factory building. Another implication of the inseparability of human capital from its owner is that the decision about how one's human capital is to be employed will be influenced by a number of individual tastes. Unlike machinery, in other words, skills will not necessarily be rented to the highest bidder.

Forms of Human Capital Investment

Although this paper focuses principally on education and training, it should be recognized that these are not the only forms of investment in human capital. Expenditures on health, for instance, may be viewed as such an investment to the extent that they improve individuals' vigor and productive capabilities. As in the case of education, cost-benefit calculations of the merit of such expenditures can be made from either a private or a public point of view. Cost-benefit estimates of health care expenditures are similar to calculations of the relative benefits of educational investment in yet another way: both are plagued by the problem of determining what part of an expenditure constitutes investment and what part constitutes consumption; whether viewed from an individual or a societal perspective, it is clear that expenditures on health have purposes other than that of simply increasing productivity. To be more concrete, a public program designed to decrease the incidence of malnutrition among pregnant women—and thus to enhance the innate abilities of their offspring—is clearly an investment in human capital that has a potential payoff in future productivity (Silber 1982). Because such programs can be justified on humanitarian grounds alone, it would be difficult indeed to decide what proportion of their cost ought to be construed as the investment on which future returns are to be calculated.

Two other forms of human capital investment that economists recognize are migration and job search. These differ from the forms that have been described thus far in that they do not change the productive capabilities of the individual but rather increase the price obtainable for them—in the case of migration by moving from an area of lower to one of higher earnings and in the case of job search by switching to a job paying a higher wage. These processes are valuable not only to the individual, but also to society because the individual's product (as measured by the market) is worth more in the new location or job. The diversity of possible investments in human capital and the difficulty if not impossibility of knowing a priori which will be most effective under different sets of circumstances are important points to keep in mind from a policy perspective. They serve to remind us that although this paper focuses on education and training, the policy alternatives are by no means confined to such programs.

Human Capital and Economic Growth

Having established that investments in human capital hold the promise of payoffs both to the individual and to society, we turn now to evidence on the contribution of such investments (particularly in education and training) to historical increases in the American standard of living.

It has already been noted that investments in human capital are expected to yield a return in the form of higher productivity. At this point, it is useful to explore more fully the meaning of that concept and to examine some data relating to trends in productivity and their relationship to human capital development. Labor productivity expresses the relationship between output and some measure of labor input—generally, worker-hours. Its most general measure is the total value of all final goods and services produced in a year divided by the total number of worker-hours devoted to their production. Interest generally centers not on the absolute level of productivity, but on its percentage of change over some period of time. Thus, when we say that labor productivity in the private sector of the U.S. economy increased by 66 percent between 1960 and the end of 1984, we mean that, on average, one worker-hour produced about two-thirds more goods and services in 1984 than in 1960. Such a measure is important because increases in productivity are the most fundamental source of increases in the material well-being of a society. As Kendrick (1977) has noted, "Since resource inputs seldom grow much faster than population . . . the main way that output per capita can be raised is by the growth of productivity" (p. 1).

The long-run trend in labor productivity has been strongly upward, albeit not without interruption. Between 1947 and 1966, the annual average rate of increase was 3.1 percent, implying a doubling every 23 years. During the period from 1973 to 1982, on the other hand, the average increase was only 1.3 percent, with productivity actually falling in 1974, 1979, 1980, and 1982. The most important single factor underlying the historical growth in labor productivity has been the increase in the amount of physical capital with which human resources cooperate in the productive process. Additional factors, however, are improvements in the quality of capital equipment, improvements in the quality of labor (via human capital development), improved organization and management, and changes in industrial structure (that is, shifting human resources out of low-productivity sectors like agriculture into higher productivity sectors like manufacturing). Attempts to estimate education's contribution to increased productivity will be discussed later in this paper.

No confident explanation can be offered for the slowdown in productivity growth during the 1970s and early 1980s (Adler 1982), although a number of factors have been cited as possible contributing agents (Kendrick 1977). These include (1) the increasing percentage of the labor force consisting of women and youth who are, on average, employed in lower productivity jobs; (2) a decrease (relative to total output) in expenditures for research and development; (3) diversion of

resources from productive uses induced by high rates of inflation; (4) the effects of a variety of social ills, including increased drug abuse; and (5) increased government regulation of industry, which in turn increases required inputs into the productive process without correspondingly increasing measured output (because improvements in such things as the purity of air and water and in the safety and comfort of workers are not reflected in the economist's measure of the gross national product [GNP]).

Kendrick (1983a) has shown that a decline in productivity growth between 1973 and 1979 occurred in Canada, Japan, and Western European countries as well as in the United States, and he has estimated that about half of the drop in productivity growth in these other countries was attributable to the factors listed in the preceding paragraph. What the future will bring as far as productivity trends are concerned cannot be predicted with confidence; however, the most reasonable assumption is that most of the forces that have produced the long-term historic growth in labor productivity will continue to operate in the future. Although the average growth rate in excess of 3 percent that prevailed in the two decades after World War II may prove to be exceptionally high (as it was relative to the first half of the century), it seems reasonable to believe that we can look forward to a trend rate of more than 2 percent (Kendrick 1983b). It is worth noting in this connection that as the economy pulled out of the recession of 1981-82 the rate of increase in productivity was in excess of 3 percent both in 1983 and 1984 (U.S. Bureau of Labor Statistics 1985). Although these gains are to be expected during a cyclical upswing, it is possible that the 1984 increase reflects, at least in part, a return to a more favorable secular trend (Fulco 1985).

As has been mentioned, numerous attempts have been made to assess the effects of human capital development, and more specifically education, on improvements in productivity. The earliest such efforts were based upon a demonstration that increases in the output of goods and services were greater than that which could be accounted for on the basis of increases in the quantity of inputs of labor and capital. A part of this residual (that is, unaccounted-for increase in output) was identified by a number of researchers as resulting from improvements in the quality of labor, a large percentage of which was attributed to education. An alternative approach, based on human capital theory, measures the benefits of education by the differences in earnings (reflecting productivity differences) among individuals with different amounts of education.

It would be nice to be able to report a single figure, or even a small range of figures, that would represent a consensus emerging from these kinds of research, but this, alas, is not possible. The most recent comprehensive evidence appears in a volume edited by Dean (1984), in which Jorgenson (1984) estimates that education was responsible for 11 percent of the substantial economic growth that had occurred in the United States between 1948 and 1973. Plant and Welch (1984), however, argue that the methods used by Jorgenson (and by others) overstate the contribution of education by failing to take into account the resources utilized by education that could have been devoted to other purposes also contributing to growth. On the other hand, Haveman and Wolfe (1984) review evidence showing that education has effects on economic well-being (for example, improvement in health, reduction in crime) that are not captured by conventional measures. The contribution of education is therefore *underestimated*.

To make matters worse, proponents of the "screening hypothesis" deny that earnings differentials among persons with different amounts of education reflect the effect of education on productivity; they argue that education is merely a criterion that employers use to identify individuals who are inherently more productive because they have had the ability and initiative to pursue the education successfully. As Ehrenberg and Smith (1985) have shown, although there is no empirical evidence that will permit a definitive rejection of this hypothesis, it seems sufficiently unreasonable, at least in its extreme form, to warrant not giving it serious consideration.

The most reasonable conclusion appears to be that announced by Murnane (1984) after reviewing the works of Jorgenson, Plant and Welch, and Haveman and Wolfe. Noting the differences among them, he observes that "all of their empirical work indicates that education has made important contributions to U.S. economic growth" (p. 196). It should be pointed out, in conclusion, that even the extreme form of the screening hypothesis does not deny the substantial benefits conferred by education on *individuals* in the form of higher earnings and other aspects of the quality of their lives.

Prospective Trends Affecting Human Capital

A number of forces may operate to affect the value of various forms of human capital and thus to condition appropriate public policies for human capital development between now and the end of the century. Some of these, such as changes in the demographic structure of the labor force, can be predicted with a fair degree of confidence; however, others—particularly the effect of technological change on the occupational and industrial structure of employment opportunities—are beclouded with considerable uncertainty and are the subject of heated debate. We turn now to an examination of some of these issues.

The National Commission on Employment Policy (1982) entitled its eighth annual report *The Work Revolution* and pointed to four major labor market trends anticipated over the remainder of the century that will have significant implications for employment policy. These are (1) a prospective decrease in labor force growth, (2) changes in the age structure of the population and labor force, (3) large-scale geographic movements of the population, and (4) technologically induced changes in the structure of employment opportunities.

Forecasts of the demographic structure of the labor force over a 15-year period can be made with a rather high degree of confidence. They depend, to be sure, on always uncertain assumptions about trends in the specific labor force participation rates of subsets of the population, but past trends in these rates are unlikely to change dramatically over relatively short periods of time. Moreover, the age and sex structure of the relevant population can be known with near certainty over a 15-year period; because all of the potential members of the labor force in the year 2000 have already been born, labor force estimates for that year are not plagued by the considerable uncertainty that surrounds future trends in the birthrate.

We can thus predict that the age structure of the working-age population will change dramatically between now and the turn of the century, with smaller proportions of young persons and larger proportions of persons aged 25-44. The population of 18- to 24-year-olds peaked in the early 1980s at somewhat over 30 million, representing about 13 percent of the total population. By the year 2000, they will have declined to under 25 million, or 9 percent of the total. Men and women between the ages of 25 and 44 will have increased from about 63 million in 1980, or 28 percent of the total, and to about 80 million in 2000, or 30 percent of the total (after having reached 81 million in 1990, or 32.6 percent of the total.)

These changes have several important implications. First, the shrinking supply of young people, along with an expected slowing of the rapid rate of growth in female labor force participation rates, will cause a substantial decline in the rate of labor force growth as compared with that of the 1970s. This means that, other things being equal, lower levels of unemployment will be somewhat easier to achieve. Second, the sharp decrease in the number of young workers entering the labor market each year will help mitigate the serious youth unemployment problem that plagued the economy in the 1970s and early 1980s. This point needs to be qualified, however, by noting that

decreasing numbers of labor force entrants are not expected among blacks and Hispanics, for whom the unemployment problem has been especially severe. Indeed, the number of these minority youth is expected to increase by about 1 percent during the 1990s. Third, and somewhat more speculative, the changing age structure may actually produce labor shortages that will increase employment opportunities for older workers and reverse or retard the trend toward early retirement.

Geographic redistributions of the population have also occurred in the recent past and may well continue in the future. During the 1970s the population of the Sunbelt increased by almost one-fourth, with the consequence that about one-third of the population now lives in this southern tier of States extending from California to the section of the eastern seaboard lying between North Carolina and Florida. If this trend continues, by 1990, the population of the South and the West will, for the first time in our history, exceed that of the North and the East.

Recent technological changes—especially the development of the computer and other high-technology industries and the expanded use of robots in manufacturing industries—are, by all odds, the most important trend from the standpoint of potential impact on the level and structure of employment opportunities and thus from the standpoint of the extent and character of human capital requirements. Although there is no question as to the existence of these changes, there is considerable uncertainty and debate as to their likely effects. Some observers foresee the development of wholesale unemployment as robotization destroys jobs in the manufacturing industries and computerization does the same in other sectors of the economy. Others predict unprecedented structural problems as relatively high-paid workers in the "smokestack" industries are confronted either with high-tech jobs for which they cannot qualify or low-paid jobs as custodians or fast-food workers in the expanding service sector, which they will be reluctant to take.

Without attempting to belittle the importance of current and impending problems of structural unemployment, one can nevertheless safely say that these rather extreme versions of the dangers of technological change are considerably overstated. Concerning the specter of mass unemployment, it may be noted that with the substitution of the word *robotization* for the word *automation*, many of the current predictions of doom are indistinguishable from those that were made in the 1950s. Yet, despite the very large shifts that have occurred over time in its composition, total employment has continued to rise, and there is no evidence of the mass unemployment that some observers had feared. As late as 1969, well after automation had become a reality, the National unemployment rate was below 4 percent. It is also significant that computerization has been accompanied by a continuation of the growth of clerical employment not only in absolute numbers, but in relative terms as well—from 15 percent of total employment in 1960 to 18.5 percent in 1982. It is true, on the other hand, that the most recent projections developed by the Bureau of Labor Statistics for 1995 foresee a slight decrease in the proportion of clerical workers over the next decade (Silvestri and Lukasiewicz 1985). Although the serious problems of structural unemployment that face the economy are not to be denied, fears of mass unemployment appear to be unwarranted. It seems safe to predict, as do Levitan and Johnson (1982), that "work is here to stay" (p. 113).

Moreover, even though structural unemployment is a serious problem, it is not at all clear that these types of problems confronting us today or likely to develop in the foreseeable future are substantially different in kind from those that have prevailed in the past. In the following passage, Lawrence and his colleagues (1984) have called attention to the erroneous conclusions that can be generated when highly selective examples are used—that is, when the computer industry (as

representative of high-tech industries) is compared with the automobile industry (a typical smokestack industry):

> In the computer industry the work force has considerably more white, female, educated, and young workers. The industry is much less unionized, pays less that the average wage in manufacturing, and is heavily concentrated in the West. Thus if adjusting to structural change meant hiring automobile workers to build computers, as conventional wisdom appears to presume, the adjustment would be considerable. (p. 126)

When all high-tech and low-tech industries are compared with each other, however, the differences are quite small.

Lawrence (1984) has also shown that the changes in total manufacturing employment in the recent past, which some observers have cited as evidence of increasing structural problems, are quite consistent with past relationships between changes in total output and manufacturing employment. On the basis of the historical record, the very small growth in the GNP between 1972 and 1982—only 6.4 percent—would have been expected to be accompanied by a 10.6 percent decrease in manufacturing employment, as compared with an actual decline of 10.4 percent. Moreover, the almost 8 percent rise in GNP between the beginning of 1983 and the beginning of 1984 brought a 6.2 percent rise in manufacturing employment, very close to the 6.8 percent increase that would have been expected on the basis of past relationships.

Finally, Bureau of Labor Statistics projections for 1995 yield distributions of employment among major industry divisions (for example, mining, manufacturing, trade, and so forth) that are very similar to those prevailing in 1982. Nevertheless, even in the light of this evidence, Lawrence wisely cautions that despite his "fairly sanguine appraisal of the aggregate effects of structural shifts, we should not overlook the attendant difficulties of dislocated workers" (p. 8). This is sound advice and a matter that will receive attention in the concluding section dealing with policy recommendations.

EDUCATION AND TRAINING AS INSTRUMENTS OF HUMAN CAPITAL DEVELOPMENT

The preceding section has defined human capital broadly to include all productive capacities acquired at some cost and has emphasized the diversity of the processes that develop such capacities. The remainder of this paper focuses exclusively on educational and training processes that contribute to preparation for work. The present section is a descriptive inventory of the extent and nature of such processes in the United States; in the next section, several of the programs are singled out for more intensive examination and evaluation.

Limiting one's attention to education and training programs that have implications for success in the labor market still leaves a very large domain; preparation for the world of work is a multifaceted process that begins early in life and that, ideally, never ends. It is therefore myopic to focus narrowly on programs that are most clearly designed to develop vocational skills—for example, vocational education in high school or professional training in postsecondary institutions. In view of the importance of the foundation that the home environment provides for the most fortunate segments of the population, a preschool compensatory education program like Head Start may under some circumstances be an even more crucial means of preparing individuals for the world of work than is a traditional vocational education curriculum in high school; for the most seriously culturally deprived, even the best designed high school curriculum may be irrelevant because it comes too late.

It should also be noted at the outset that developing the skills and know-how that contribute to the productive effectiveness of human resources means more than developing skills and knowledge directly related to the performance of occupational roles. Also relevant are the skills that enable an individual to function intelligently and effectively in the labor market. Such labor market skills include an understanding of available occupational alternatives, the avenues of preparation for each, effective job search methods, and techniques for presenting oneself to an employer in a way that maximizes the probability of being hired. Human capital development also embraces the inculcation of attitudes and behavior patterns consistent with the requirements of the world of work. Human beings clearly have no innate disposition to submit to the kind of regimentation that is inherent in an industrial (or even a postindustrial) society. The socialization process in such societies, including the educational system, tends to create the required attitudes and patterns of behavior.

As has been observed, the processes that prepare individuals in all these ways for the world of work are numerous and varied; moreover, the manner in which they operate is poorly understood. The *institutions* that play a role in these processes are also numerous and not readily classifiable. From many points of view, the most fundamental is the family; however, aside from acknowledging this fact, we will have nothing more to say about the family's role or about the ways in which it might be made more effective.

For the purposes of this paper, the institutions that are important in preparing individuals for their work roles can conveniently, even if somewhat arbitrarily, be classified into four major categories: (1) formal preschool programs, (2) "regular" schooling, (3) adult education and training

exclusive of federally financed employment and training programs, and (4) Federal employment and training programs. The first of these is composed of the myriad forms of education and training that take place in group settings for prekindergarten children and includes the federally financed Head Start program that will be examined in the next section. The second category includes primary, secondary, and higher education; together, the third and fourth embrace all other formal education and training activities and are divided into two groups only because of the relatively recent appearance of the Federal programs and because more is known about them than about the other forms of adult education and training.

Preschool Education

The number of preschool programs in the United States is not known, but the National Center for Education Statistics (NCES) reports that enrollment in such institutions was 5.5 million children as of 1982. This type of program has become considerably more popular in recent years. Despite a decrease of 8 percent between 1970 and 1982 in the population of children between 3 and 5 years of age, private and public preschool enrollments increased by 27 percent over the same period. The NCES predicts an enrollment of 7 million by 1992 ("Enrollments Swelling" 1984). Racial composition differs substantially between public and private preschool programs. Whereas white children make up 81 percent of the under-5 population, they constitute 90 percent of the enrollment in private and 69 percent of the enrollment in public nursery schools (U.S. Bureau of the Census 1983).

Regular Education

The extent and nature of the education and training that takes place in the regular school system can be described with some confidence since the NCES collects and publishes current data on formal education in both public and private schools.

Elementary and Secondary Education

Somewhat over 45 million students were enrolled in public and private schools in 1982; almost one-third of these students were in grades 9-12. Private schools accounted for slightly more than one-tenth of total enrollments—with about the same proportion at both the primary and secondary levels.

Public primary and secondary education is financed largely by State and local governments. Of a total expenditure in 1983 of $117.6 billion, only 9 percent came from Federal funds. These funds go largely to (1) providing financial assistance to schools in areas with high proportions of low-income families or in areas burdened by such Federal activities as the operation of military installations, (2) strengthening instruction in specific subjects important to National defense (for example, science, mathematics, foreign languages), (3) helping to finance vocational education, and (4) improving educational opportunities for minorities, women, and handicapped persons.

The role of the Federal Government goes back to 1917 when the Smith-Hughes Act was passed, establishing grants-in-aid for vocational education. However, it was not until the passage of the Primary and Secondary Education Act of 1964 that the Federal role assumed its contemporary proportions; then, over the next 16 years, there was a steady growth in the level of Federal

support. This trend ended in 1981 with the Administration's initiative to abolish the U.S. Department of Education and to reduce funding for Federal education programs. The Administration was only partially successful in these efforts; whereas budget requests for fiscal years 1981-84 were consistently below the level of 1980 appropriations for education, Congress appropriated considerably more than had been requested in each year. In fiscal 1985, the administration budget called for expenditures of $15.5 billion, but actual appropriations came to $17.9 billion. Nevertheless, the Congressional Budget Office reported that Federal spending for education in dollars adjusted for the effects of inflation had dropped by more than 20 percent between 1980 and 1984. The Federal share of total expenditures for public primary and secondary education dropped from 8.7 percent in 1980 to 6.4 percent in 1984 ("Reagan and the Federal Education Budget" 1984).

A veritable revolution in education has occurred in the United States during the present century (Mare 1979). The average person born at the beginning of the century completed only 8.6 years of schooling; those born at midcentury achieved an average of 12.8 years. In 1910 about three-fifths of all persons 5-19 years of age were in school; by the mid-1970s the proportion had reached about nine-tenths. Between 1940 and 1980, the proportion of persons 25 years and older with less than a high school education dropped continously—from 76 percent at the beginning of the period to 45 percent in 1970 and 30 percent in 1981. By the end of the period, three-fourths of all 17-year-olds were graduating from high school and nearly half of all graduates were going on to college.

There were other signs of progress as well. Between 1966 and 1981, the proportion of public school teachers with graduate or 6-year professional degrees rose from 15 to 48 percent at the elementary level and from 32 to 54 percent at the secondary level. In dollars of constant (1980) purchasing power, total expenditures on public primary and secondary education rose between 1960 and 1980 from $41.2 billion to $96 billion, a doubling on the basis of per-pupil expenditure. Over the same 20-year period, average teachers' salaries, again in constant dollars, rose by 22 percent as compared with a 5 percent increase in average weekly earnings of production and nonsupervisory workers in private industry. These dramatic indications of progress were nevertheless accompanied by signs that public education was in deep trouble in the early 1980s and had been for some time, a matter that will be explored in the following section.

Higher Education

At the beginning of the 1981-82 academic year, over 12 million persons were enrolled in institutions of higher learning; almost two-fifths of these individuals were in 2-year colleges or degree-granting vocational-technical institutes, with the remainder attending 4-year institutions. As a result of increases in both the number of college-age youth (the baby boom generation) and age-specific enrollment rates, total enrollment in 1981-82 was more than three times greater than in 1960. Enrollment increases have been especially great during the past two decades for women and for blacks, causing the sex differential in enrollment rates to disappear and the racial disparity to shrink. There was also an influx of women into areas of specialization dominated by men. Women's share of the total number of degrees rose from 5 to 23 percent in medicine, 1 to 13 percent in dentistry, 2 to 30 percent in law, and 0.3 to 8.7 percent in engineering.

Total expenditures of institutions of higher education amounted to $77 billion in the 1981-82 academic year, of which 14 percent came from the Federal Government, 31 percent from State governments, and 2.9 percent from local governments. Slightly over one-half originated from other sources—largely tuition payments and private school endowments.

Institutions of higher education produce a large number of potential incumbents of high-level occupations each year. One million bachelor's or first professional degrees and one-half million degrees below the bachelor's level were conferred in 1980. At the postbaccalaureate level, there were about 300,000 master's degrees, 33,000 doctorates, 15,000 degrees in medicine, 5,000 in dentistry, and 36,000 in law.

A college degree has long been recognized as a ticket of admission to the more attractive and higher paying jobs in the economy. Among all 25- to 64-year-old employed civilians in March 1983, two-thirds of those with 4 or more years of college were in managerial or professional occupations, in contrast with only one-eighth of those having only a high school diploma. The median 1980 income of males with 4 years of college was $22,713, which was 52 percent above the median for men with only a high school diploma. For women, the differential was even larger.

Largely as the result of increasing supplies of college graduates and of some slowing down in the rate of growth in managerial and professional jobs, the relative income advantage of college graduates has declined in recent years, thereby decreasing the economic return to higher education somewhat. Nevertheless, as the foregoing figures demonstrate, the absolute advantage is still great. Moreover, advanced education provides a number of advantages that are not reflected in earnings differentials and that are therefore not captured by calculations of rates of return (Haveman and Wolfe 1984; Mincer 1984). From the individual's perspective, these include the greater fringe benefits and the better working conditions in jobs to which higher education allows access. Improvement in the quality of leisure and the quality of the choices that an individual makes must also be considered, not to mention the benefits that are reflected in the development of one's children. Haveman and Wolfe conclude that conventional benefit-cost estimates have captured only about three-fifths of the benefits conferred by higher education.

Adult Education and Training

It is not possible to estimate with any confidence exactly how much education and training takes place after the end of formal schooling. One problem lies in defining what type of training is to be included in the estimate. For example, adult learning experiences can include a course in welding or beauty culture taken in a proprietary technical school, vocational correspondence courses or community-sponsored courses for senior citizens in such subjects as photography or basket weaving and self-instruction via visits to the public library. Even if definitional problems are resolved there is the problem of double counting. An obvious example is counting persons enrolled in college courses at the expense of their employers once and then counting them a second time because they are also included in data on enrollments in higher education.

As a consequence, recent estimates of the number of persons engaged in such activity have ranged from 12 percent to virtually 100 percent of the population 17 years of age and older (Barton 1982). The lower of the two figures is based on NCES statistics and includes only part-time instruction in schools. The higher, which is based on sample surveys, counts almost any type of learning experience, including a visit to the library for needed information.

The most careful and comprehensive recent catalogue of education and training activities that can contribute to the development of job skills once formal education ceases is that prepared by Paul Barton (1982). The principal components of this adult education and training network, together with the best available estimates of the number of individuals served annually by each, are shown in table 1. The enrollment estimates are exceedingly crude. One indication of the extent of our ignorance is the fact that a 1973 survey of institutions offering correspondence courses

TABLE 1

EXTENT OF PARTICIPATION IN ADULT EDUCATION AND TRAINING, BY TYPE OF PROGRAM

Type of Program[a]	Number of Participants[b] (millions)
Adult education in elementary and secondary schools	1.6
Adult participants in the following institutions:	
Postsecondary vocational or business schools	1.5
2-year colleges or vocational institutes	3.0
4-year colleges/universities	3.3
Classroom education and training in private industry[c]	6.3
Military training	1.6
Armed Forces voluntary education	0.6
Civilian government employee programs	1.7
Apprenticeship programs	0.5
Community organization programs	11.0
Correspondence instruction	3.9

[a]Excludes Federal employment and training programs, relevant activities of the Cooperative Extension Service of the U.S. Department of Agriculture, educational programs of professional associations, workers' education programs sponsored by labor organizations, and private instruction by tutors.

[b]Estimates as of various years in the 1970s.

[c]Includes tuition-aid programs.

SOURCE: Barton 1982, pp. 15-33.

reported approximately 4 million students, whereas a 1975 survey conducted by NCES yielded an estimate of only 600,000 individuals in such courses. Barton laments the fact that we know "only that somewhere between 38 and 84 million people are engaged in organized learning" and recommends the appointment of a National Commission on Education and Training Statistics to "identify gaps in statistical information and . . . to assemble a picture of the whole as well as the parts" (p. 32).

Company Training Programs

There is little doubt that employing establishments themselves are the most significant sources of work skills training among individuals who have terminated their formal schooling. Most of what we know about training practices within industry comes either from surveys of firms or from surveys of workers. The former generally suffer from overrepresentation of larger firms, where formal training programs are more likely to exist; the latter, on the other hand tend to understate the incidence of training, primarily because of the faulty recall of respondents who especially tend to forget short, in-house training programs (Carnevale and Goldstein 1983).

Information gleaned from a number of surveys appears to support the following conclusions (Barton 1982; Carnevale and Goldstein 1983). Formal training is provided by less than 1/2 of all firms but by more than 4 out of 5 of those with more than 500 employees. The proportion of workers involved in any 1 year may be as high as 1/5 in large firms, but smaller for industry in general. Most of the training is given in-house; however, perhaps as much as 1/3 is provided externally. Much of the training is directed at managerial and other white collar workers; manual workers receive a disproportionately small share. Finally, there is considerable industrial variation in the incidence of training, with Government, mining, finance, insurance, and real estate providing substantially above-average amounts. The most recent estimate of the total expenditures of private industry for the training and general education of their employees is that of Eurich (1985, p. 6) in a Carnegie Foundation Special Report—a total of $60 billion.

In addition to the funding of training and education that have been initiated unilaterally by employers, training programs for displaced workers have been established through collective bargaining. The automation funds established in the late 1950s were early examples. A more recent example is the Nickel Fund in the automobile industry that came into existence as the result of an agreement between the United Auto Workers and the Ford Motor Company in 1982. The contribution of the company to a training fund began at the level of 5 cents per hour but has since risen to three times that amount. In the spring of 1985 several thousand laid-off Ford workers were taking courses at postsecondary institutions around the country in such subjects as welding and computer science (Serrin 1985).

Apprenticeship

Apprenticeship, which is an arrangement to train workers for skilled manual jobs that require some theoretical or conceptual foundation, is one type of formal training in industry for which there are reasonably good statistics. Extending back to the Middle Ages, when virtually all artisans learned their trades under the tutelage of master craftsmen, the institution is today responsible for training only a small proportion of American skilled workers. Approximately half a million workers are enrolled in such programs, with about three-fifths of these registered with the Bureau of Apprenticeship and Training (BAT) in the U.S. Department of Labor or with a BAT-approved State agency. The remainder are in unregistered programs.

Apprenticeship programs may be sponsored by a single employer, by a group of employers, or jointly by a union and one or more employers. Although nearly 80 percent are sponsored unilaterally by employers, the larger ones are jointly sponsored by unions and employers. This latter group accounts for about four-fifths of all registered apprentices (Glover 1980). To meet the requirements of the National Apprenticeship Act of 1937, a program must (1) require apprentices to be at least 16 year old, (2) include a definite schedule of class instruction and work experience under adequate supervision, (3) provide for periodic evaluation of performance and an increasing schedule of wages, and (4) be open to men and women without regard to race, creed, color, national origin, or physical handicap.

In recent years, a substantial majority of registered apprentices have been in the building trades; however, BAT has been attempting to expand the programs outside of the industries in which they have been traditional. Such promotional campaigns have led to apprenticeships in the finance, insurance, and real estate industries, in the Armed Forces, and in correctional institutions. As a result of such developments, the proportion of all apprentices working in the construction industry dropped from 60 to 54 percent between 1980 and 1982.

On-the-Job Training

However unsatisfactory the estimates of the extent of measures of formal training in industry, it is even less possible to quantify the far more pervasive *informal* on-the-job training (OJT) that takes place. There are virtually no records of informal training, and the estimates that exist have been made on the basis of rather heroic assumptions. The most definitive work of this kind is that of Jacob Mincer (1962), who estimated that American males invested $13.5 billion in OJT in 1958 (by accepting wages lower than the true value of their services to employers). This was about three-fifths as large as the total investment made in regular education in that year.

Federally Financed Employment and Training Programs

Federally financed job training programs represent only a very small part of the total human resource development effort in the United States, accounting (as of 1980) for only about 7 cents of every training dollar. This compares with 73 cents for elementary, secondary, and postsecondary education, 15 cents for private business and industry, and 5 cents for Government, civilian, and military training (Johnston 1981). By the middle of the decade, the relative share of the federally financed job training programs had shrunk even further. Federal programs remain, at least potentially, a very important element in the total human capital development scheme, for they tend to compensate for failures in other parts of the system and are also a means of adjusting to the disemployment effects of technological change.

The Federal Government's initiative in the field of postschool job training was a product of the rising levels of unemployment in the 1950s, which some observers attributed to technological developments that were creating a mismatch between job requirements and workers' skills. The earliest legislative responses to this perception were the Area Redevelopment Act of 1961 and the Manpower Development and Training Act (MDTA) of 1962. The latter provided opportunities to unemployed workers for classroom training and subsistence allowances as well as for subsidized on-the-job training to the extent that it could be arranged with private employers. The program involved collaboration at the Federal level between the U.S. Department of Labor and the U.S. Department of Health, Education, and Welfare and, at the State and local levels, between the public employment service and vocational education administrators.

Experience soon indicated that the original MDTA had misconstrued the nature of the unemployment problem; the principal need was not for retraining technologically displaced "mainstream" workers but rather for training individuals who had no useful skills to begin with. Many of this latter group needed basic literacy training and other forms of assistance if they were to be able to compete successfully in the labor market. Accordingly, as time went on the program became increasingly targeted toward economically disadvantaged persons and toward those groups suffering from discrimination in the labor market.

Additional training programs with the same objectives were established by other legislation of the 1960s. The Economic Opportunity Act of 1964, which was the legislative embodiment of Lyndon Johnson's War on Poverty, established the Neighborhood Youth Corps and the Job Corps. The former provided for work experience in public service jobs for in- and out-of-school youth and also for a summer job program. The Job Corps was a residential training program for youths from seriously deprived homes and neighborhoods. Job Opportunities in the Business Sector (JOBS) was begun in 1968 as a joint responsibility of the Office of Economic Opportunity and the U.S. Department of Labor. Under the program, the National Alliance of Businessmen, a committee of prestigious business leaders, was to enlist the cooperation of private industry to provide subsidized employment to disadvantaged persons.

The Social Security Amendments of 1967 established the Work Incentive Program (WIN) that was designed to make welfare recipients employable and to get them off the welfare rolls. Adult recipients of Aid to Families with Dependent Children were required to register for work or training opportunities as a condition of continued receipt of benefits. In 1971, provision was made for granting tax credits to employers hiring participants in the WIN program.

By the early 1970s, "manpower" programs (the pre-women's liberation term for employment and training programs) had become a firmly entrenched component of human resource policy in the United States. Outlays for Federal programs, which had totaled less than $250 million in fiscal year 1961, grew to more than $3 billion in fiscal year 1970. Nevertheless, several aspects of the effort aroused dissatisfaction. The bewildering proliferation of programs and the lack of coordination among administering agencies at both the Federal and local levels were areas of particular concern.

In response to calls for decentralization and "decategorization," the Comprehensive Employment and Training Act (CETA) was passed in 1972. This legislation allowed units of local government greater control over the mix of services to be made available within their jurisdictions. Specifically, government units with populations of 100,000 or more might become prime sponsors and submit employment and training plans to the Department of Labor. If approved, funds were provided for the types of services specified in the plan. Areas of a State that did not become prime sponsors were included in a balance-of-state prime sponsorship under the authority of the governor.

Significant amendments to CETA, which were enacted in 1974 and 1977, authorized a sizable countercylical public service employment (PSE) program and a major series of additional programs for youth. Amendments passed in 1978 restricted CETA programs to economically disadvantaged and long-term unemployed individuals and added a $5 billion Private Sector Initiative Program (PSIP) under the control of Private Industry Councils (PICs) to promote the employment of disadvantaged persons in private industry.

Thus, as it stood in 1981, CETA provided for comprehensive services, which were administered through State and local governments, to improve the employability of disadvantaged or

unemployed persons. The act included a PSE for the structurally unemployed as well as a general PSE program when unemployment exceeded 4 percent of the labor force. Expenditures on these programs reached a peak of about $9.5 billion in fiscal year 1979, over one-half of which was spent on the PSE programs. Despite a rising National unemployment rate, Federal expenditures under CETA dropped sharply after 1979 and fell to under $4 billion in 1983. Reductions were made in all programs except PSIP; however, the most drastic change was the complete elimination of the PSE programs, which had generated considerable criticism and which the Administration had opposed.

With the approaching expiration of CETA's authorization, new legislation, the Job Training Partnership Act (JTPA), was passed late in 1982. The new law gave much greater authority to State governors, ceding to them much of the responsibility that had been exercised by the Department of Labor under CETA. It also gave much greater authority to the PICs in planning and administering employment and training programs. With respect to substance, JTPA ruled out PSE programs and placed greater emphasis than had CETA on training as compared with other forms of support and service. Service delivery areas (SDAs), which are analogous to the prime sponsors under CETA, are authorized to provide a variety of training and other employability-promoting services to economically disadvantaged persons and to dislocated mainstream workers. At least 40 percent of the funds for economically disadvantaged individuals are reserved for youth.

Thus, despite their relatively short history, the federally financed employment and training programs have undergone several substantial transformations. An evaluation of their accomplishments will be presented in the following section of this paper.

EVALUATION OF SELECTED PROGRAMS

This section draws together the best available evidence on the effectiveness of four major systems of human capital development in the United States: (1) preschool compensatory education, with special reference to Head Start; (2) the public system of primary and secondary education, with separate attention to the high school vocational curriculum; (3) federally financed employment and training programs for economically disadvantaged persons; and (4) training programs for dislocated workers. Together with the more descriptive material in the preceding section, it provides the basis for the policy recommendations contained in the final section of this paper.

Head Start

Preschool programs are not generally thought of in the context of preparation for employment. However, to the extent that they are successful in overcoming or mitigating the serious deficiencies with which some children enter the formal educational system, they may make the difference between success and failure in subsequent educational and training experiences that are more directly relevant to the labor market. There is evidence that achievement during childhood affects income later in life, both directly and indirectly through its effect on educational attainment (Grave 1979).

The major public early childhood intervention program is Head Start, which was launched by the Office of Economic Opportunity in 1965 as part of President Johnson's War on Poverty and which is now administered by the U.S. Department of Health and Human Services. Designed as a means of breaking the cycle of poverty, the program provides preschool children from low-income families with a comprehensive set of services that are intended to meet educational, social, health, nutritional, and psychological needs (Zigler and Valentine 1979).

At the local level, the program is administered either by community-based organizations (CBOs), other nonprofit organizations, or by the public school system. The educational component of the program consists of a variety of learning experiences that are designed to promote intellectual, social, and emotional growth. Services in the realm of health, medical, and dental care are provided; a mental health specialist must be available to each local program. Not only are participating children served meals, but nutritionists also attempt to bring good nutritional practices to the attention of enrollees' parents. Involvement of parents is an important feature of the programs; many parents serve as volunteers, and staff members periodically visit the homes of the children. Staff members are trained to provide referrals to social agencies in the community in cases where such services appear to be required.

Having begun as an 8-week summer program, the emphasis of Head Start quickly shifted to full-year programs; by 1970, a majority of enrolled children were attending through the year. Between 1974 and 1981, the proportion of enrollees in summer programs dwindled from under 20 percent to less than 5 percent, and in 1982, the summer program was discontinued. Enrollments have been between 300,000 and 400,000 since 1974; Federal appropriations have grown from $326 million in 1970 to close to $1 billion in 1984.

Because of its Federal sponsorship, Head Start is the best known, but by no means the only preschool intervention effort in the United States. There are many others that vary significantly in objectives, target populations, and methods. Moreover, Head Start itself is not cast from a single mold. It is actually a collection of over 2,000 local programs that vary in both quality and specific approach but that are nevertheless united by their commitment to a common set of guiding principles and to the goal of enhancing the quality of life of children and families (Zigler and Berman 1983). Although this diversity has complicated the process of evaluation, an amazing number of evaluative studies have nevertheless been reported: more than 1,000 literature reviews have been identified, with little overlap among the studies considered by different reviewers, and as many as 1,500 studies of Head Start programs alone have been made (Collins 1984).

In 1969, the earliest National evaluation of Head Start reported that the gains in IQ among preschoolers for which the program appeared to be responsible were short lived, disappearing by the time the youngsters completed second grade. This widely cited finding led many to conclude that the Head Start program—and preschool intervention efforts in general—was a failure. Subsequent research, however, has refuted that conclusion rather conclusively. For one thing, the study was flawed by serious methodological deficiencies (Grave 1979; Stickney and Plunkett 1983; Zigler and Berman 1983). For another, its emphasis on IQ overlooked other important contributions of the program, including the immediate effects on the quality of the children's lives while they were in the program (Zigler and Berman 1983).

By the 1980s, careful reviews of the research that had been done produced a consensus that early childhood intervention programs, and Head Start in particular, had produced long-term beneficial results. In the Consortium for Longitudinal Studies, a group of 12 independent researchers who had conducted experimental studies of preschool programs made their data available for reanalysis by a research group at Cornell University that had not been involved in the original studies. This reanalysis produced evidence of enduring gains in school performance (although not in IQ) over a period as long as 13 years. Specifically, the experimental groups were less likely to be in special education classes and more likely to be in the appropriate grade for their age than were the control groups (Zigler and Berman 1983).

More recently, the Head Start Evaluation, Synthesis and Utilization Project has begun to present findings based on about 1,500 individual studies. These findings show positive effects of the program on the cognitive and socioemotional development of children, on their health, on the quality of parenting and parent-child interaction, and on the extent and character of social and educational services offered in the community (Collins 1984). Concerning the last effects mentioned, one study produced evidence that Head Start had increased the responsiveness of local educational and health institutions to the needs of low-income populations (Zigler and Berman 1983). A synthesis of 210 research studies released by the Head Start Bureau in late 1985 reports that whereas cognitive and socioemotional gains of Head Start participants are short lived, there are nevertheless educational gains in that Head Start children are less likely to fail a grade in school or to be assigned to special education classes ("Cognitive, Social Gains from Head Start" 1985).

Although not concerned with Head Start, there has been one important study of the effect of early childhood intervention that deserves mention both because of its careful research design and because of its attempt to quantify the costs and benefits of the program. The Perry Preschool Project has used a truly experimental design, with assignment to the treatment and control groups having been made on an essentially random basis. The program involved daily preschool education and weekly home visits over the course of two school years for economically disadvantaged children at ages 3 and 4. By the time the youngsters had reached the ages of 18-22, a number of positive effects of the program had been registered: (1) better grades in elementary school; (2) a lower

rate of assignment to special education classes; (3) greater likelihood of graduating from high school; and (4) increased employment and earnings at age 19. A cost-benefit analysis concludes that for every $1,000 invested in the 2-year preschool program, almost $4,000 has been or will be recouped in social benefits through lower educational costs, reduced delinquency, and higher lifetime earnings (Berrveta-Clement et al. 1984).

A very recent study in Montgomery County, Maryland, found that Head Start participants had lagged well behind the school population at large some 5 to 13 years after their Head Start experience—a hardly surprising finding, especially in the sixth most wealthy county in the country. In response to the publication of these results, Edward Zigler, professor of psychology at Yale University and former Head Start director, was quoted as saying the following:

> We have to get away from the . . . notion that what you do for a year takes care of the problem. A child's life is continuous and if they are thrown back into a depriving situation after a year of Head Start, they are in trouble. (Maeroff 1985b)

On the basis of their appraisal of past and current evaluations of early childhood intervention programs, Zigler and Berman (1983) make the following disquieting observation:

> We have come a long way in our methods and our knowledge. Still, the basic Head Start program did not change much during the years described here. What changed were media reports and attitudes, which alternately supported and threatened the program's survival. This experience underscores the potential impact of social science research and the manner in which it is reported. (p. 903)

A careful review of all of the available evidence today indicates that the Head Start program has brought significant gains to participants and, moreover, that carefully designed early childhood intervention programs promise significant returns to society at large.

Primary and Secondary Education

As mentioned in the earlier description of the formal educational system, serious problems in primary and secondary education in the United States attracted popular attention in the early 1980s. The remarkable quantitative gains that had occurred during the preceding half century were accompanied by—and perhaps even helped to produce—serious qualitative deficiencies that were highlighted in a number of commission or task force reports issued in 1983. Attracting widest attention was *A Nation at Risk*, the report of the National Commission on Excellence in Education (1983), which pointed to the facts that (1) 13 percent of 17-year-olds are functional illiterates; (2) on 19 academic achievement tests administered in 21 countries, American youth failed to finish first or second place on any and scored in last place on 7; and (3) average Scholastic Aptitude Test (SAT) scores of college-bound seniors had dropped by 50 points on the verbal component and by 36 points on the math component between 1963 and 1980.

The commission issued the following warning:

> Our nation is at risk . . . the educational foundations of our society are presently being eroded by a rising tide of mediocrity. . . . If an unfriendly foreign power had attempted to impose on America the mediocre educational performance that exists today we might well have viewed it as an act of war. (p. 5)

Among its recommendations were (1) more demanding high school graduation requirements, including 3 years of math, science, and social studies; 1 semester of computer science; and for college-bound students, 2 years of foreign language; (2) higher achievement standards for graduation and for admission to 4-year colleges; (3) increased time for basic academic studies, either through a reallocation of existing time or through a longer school day or school year (noting that the average in the United States is 180 6-hour days as compared with 220 8-hour days in Great Britain); (4) better training, better pay, and 11-month contracts for teachers; and (5) increased citizen involvement in schools.

Concerning the content of education and the nature of the educational process, another report (Goodlad 1984), which was based on an 8-year study that included systematic classroom observation in 13 communities, noted that (1) the average instructional day in a junior or senior high school includes 150 minutes of talking, of which only 7 are initiated by students; (2) the extent of student involvement declines as they advance from grade to grade; and (3) in most classrooms, there is an emotionally flat atmosphere that causes students to put their minds on hold.

A third report, sponsored by the Carnegie Foundation for the Advancement of Teaching (Boyer 1983), was less pessimistic. It suggested that the worst was already in the past inasmuch as public concern in the late 1970s had helped to produce some modest improvements in test scores and in high school curricula and a rise in college admission standards. The report called attention to the numerous new challenges that the school system had met: serving larger numbers of students from different racial and cultural backgrounds, educating many handicapped students who had previously been excluded, and developing new experimental programs. It nevertheless acknowledged a large gap between school achievement and what remained to be accomplished.

These and other recent reports of education commissions have been criticized (Peterson 1983) for the following: exaggerating the extent of educational problems (for example, noting the decline in SAT scores without mentioning the increase in reading scores of 9-year-olds); attributing declining performance exclusively to the educational system without recognizing other possible sources (such as increases in drug use and in the incidence of single-parent households); recommending changes without explaining how they are to be achieved (for instance, calls for improved discipline); being oblivious to the costs of some recommendations (including giving teachers 11-month contracts); and failing to make recommendations for organizational change.

The reports have nonetheless been remarkably successful in generating interest in reform. By mid-1984, the Secretary of Education was able to report (U.S. Department of Education 1984) that 70,000 copies of *A Nation at Risk* had been sold by the Government Printing Office and that private groups had printed at least half a million copies for their constituencies. During the preceding year, 275 state-level task forces or commissions had been established to consider educational issues. More stringent high school graduation requirements were being considered in 48 States with 21 reporting initiatives to improve instructional materials. Eight States had increased the number of hours per school day and 7 had lengthened the school year. Moreover, 24 were considering master teacher or career ladder programs and 6 had actually begun either pilot or statewide programs of these kinds.

In mid-1985, the Education Commission of the States, a coalition of governors and State education officials, joined the National Governors' Association in undertaking a study of how States might improve public education (Friendly 1985b). By that time, all of the States had already enacted reform measures, some of which were far reaching. Tennessee, for example, had adopted legislation creating a career ladder plan for teachers, providing forgivable loans to encourage college students to enter math and science teaching, and establishing a summer program for gifted

high school students. These innovations were financed by a 1-cent increase in the sales tax. In addition, one-half of the State's $3.5 billion budget is being devoted to education. Since 1982, seven other southern States have adopted comprehensive plans for improving education, in some cases tripling the amount of State funds devoted to it (Johnson 1985). However, despite these rather dramatic changes, there is still a long way to go. When the National Commission on Excellence in Education had made its report, fewer than 2 percent of those graduating from high school had met the commission's curricular recommendations ("Percent of High School Graduates" 1985).

The need to upgrade teaching in elementary and secondary schools is almost universally recognized, but there is certainly no consensus on how this should be done. There is some evidence that this long-standing problem has become more serious in recent years, perhaps because special factors affecting influx into the profession during the Great Depression, World War II, and the Vietnam War have not continued to operate (Shanker 1983). In 1973, high school seniors intending to enter colleges of education had SAT scores on the verbal and math components that were 59 points below the National average; by 1980, this gap had grown to 80 points.

The National Education Association in mid-1985 abandoned its earlier strong opposition to requiring teachers to demonstrate acceptable levels of competence through testing ("NEA Approves New Standards" 1985); also, Albert Shanker, president of the American Federation of Teachers, has endorsed testing, at least at the entry level. As additional means of attracting more competent persons into the profession, he recommends the following: competitive entry salaries; teaching assignments consistent with the teacher's training; and better working conditions, including removal of violent and disruptive students from the classroom so that the teacher does not have to be a "psychiatrist or a social worker or a jailer" (Shanker 1983).

Another proposal for strengthening teaching, in addition to raising teachers' salaries in general, is to introduce salary differentials based on merit rather than solely on seniority and possession of advanced degrees. Teacher organizations have strongly resisted such a salary system on the grounds that it would simply allow implementation of favoritism. However, Shanker has also recently endorsed the idea of merit pay for teachers who pass nationally standardized examinations in their area of specialization (Maeroff 1985c). Perhaps an even more obvious need is for salary differentials by field of specialization that reflect the realities of the labor market.

More radical proposals for change are designed to force public schools to compete with other educational institutions or among themselves, thus relying on market forces to promote improvement. These include tuition tax credits that would in effect allow parents to send their children to private schools partly at public expense, and voucher systems that would provide educational chits for use at the school of one's choice. One problem with these proposals is their uncertain constitutionality as applied to church-affiliated schools. In addition, critics of these market-based approaches argue that they would lead to greater inequality of educational opportunity by encouraging flight from the public schools by precisely those families who are sufficiently concerned and active to press for reform, thereby leaving behind larger concentrations of disadvantaged students (Breneman 1983; Breneman and Nelson 1980; Puckett 1983b). However, the segregation argument—at least as it is applied to tuition tax credits—has been disputed (Glazer 1983). Actually, although voucher plans have been advocated since the midfifties (Puckett 1983a) and although Congress has considered tuition tax credit proposals since 1975 (James and Levin 1983), the debate on these proposals has been almost entirely theoretical; no definitive studies have been made of the effects of either strategy (James and Levin 1983; Puckett 1983b).

The most effective strategies for educational reform will doubtless continue to be debated. One of the issues will be whether the view of the Administration as to the appropriate role of the Federal Government is to prevail. After two decades of increasing Federal involvement aimed especially at equalizing educational opportunity, President Reagan has argued, thus far unsuccessfully, that education should be returned to the exclusive control of State and local governments. This issue will receive further attention in the concluding section of this paper.

Secondary Vocational Education

The vocational curriculum at the secondary level is ostensibly the most relevant to preparation for employment. Under legislation beginning with the Smith-Hughes Act in 1917 and significantly amended a number of times between then and 1984, the Federal Government provides about 10 percent of the approximately $10 billion spent annually on vocational education. Courses are offered in more than 15,000 public comprehensive or vocational high schools or in area vocational centers to large numbers of students, most of whom are not in the vocational curriculum. In 1982, only slightly more than 25 percent of all high school seniors described their programs as vocational; however, 95 percent of all graduates in that year had earned some credits in vocational courses (National Commission on Secondary Vocational Education 1984).

Even those who strongly support the desirability of secondary vocational education have recognized a variety of problems in its delivery. Included among these are the absence of a full range of programs in rural areas; failure of many curricula to reflect up-to-date practices and to use the most technologically advanced equipment; inadequate preparation of many teachers; failure of the programs to attract and to serve the gifted and talented; and inadequate efforts to combat the sex stereotyping of occupations, which results in the concentration of women in the clerical specialties and of men in trade and industrial programs (Evans 1981; National Commission on Secondary Vocational Education 1984).

To deal with some of these problems, the National Commission on Secondary Vocational Education (NCSVE) made a series of suggestions for change after 7 months of study, site visits, and hearings. The Commission urged an integration of vocational and other forms of education that would "give every young person in America the opportunity and the right to experience the best of academic and vocational education" (NCSVE 1984, p. 24). It specifically recommended (inter alia) that (1) all students be able to select courses from both academic and vocational areas; (2) there not be separate tracks leading to different diplomas; (3) curricular requirements not restrict students' opportunities to take vocational courses; (4) vocational courses provide instruction and practice in the basic skills of reading, writing, arithmetic, speaking, and problem solving; and (5) vocational courses be enriched and diversified so as to attract all types of students, including the college bound.

A number of studies have attempted to assess the effectiveness of the high school vocational education curriculum in preparing students for the world of work. In their early study of this question, Grasso and Shea (1979) found little evidence of the general superiority of the vocational as compared with the general curriculum. Specifically, they reported that males enrolled in vocational programs were neither less likely to drop out of school nor more likely to do better in the labor market after graduation than were comparable students in the general curriculum. On the other hand, female students enrolled in the business and office vocational programs were more likely to graduate and to receive higher pay than women in the general curriculum, although the advantage tended to disappear after 10 years of labor market experience.

Later studies, which are reviewed by Campbell and Basinger (1985), have produced findings that are basically consistent with those of Grasso and Shea. On the other hand, in their own study based on two longitudinal data banks, Campbell and Basinger found clear evidence of a wage advantage for vocational graduates *who have jobs related to their training*, but no comparable advantage in employment stability. The earnings advantage varies among different gender and race/ethnic groups, being most pronounced among white males and not really discernible among either male or female minority youth.

Hotchkiss, Kang, and Bishop (1984) have also adduced evidence of a different kind showing a strong relationship between the number of vocational courses a student takes in high school and labor market success in the period immediately after graduation. Controlling for students' backgrounds, attitudes, grades, and test scores, these researchers found that non-college-bound students taking four vocational courses enjoyed an annual earnings advantage of 12 percent in the case of men and 16 percent in the case of women as compared with those who took no more than one vocational course.

Despite these very recent findings, which provide a clearer justification for the vocational education curriculum than earlier studies had offered, it seems too early to rule out the judgment of Saks (1984) that "the secondary vocational education system, while more costly than other forms of high school, does not generally provide long-term earnings gains for its graduates" (p. 61). Specifically, it is not yet clear to what extent the differences in findings between these latest studies and the earlier ones are attributable to differences in methodology, changes that have occurred in the economy and the labor market, or modifications that have been made in high school curricula. The further research that Campbell and his associates at the National Center for Research in Vocational Education are currently doing with an expanded and more up-to-date database will perhaps permit more confident conclusions on these issues.

Employment and Training Programs for Economically Disadvantaged Persons

Verdicts about the degree of success and the utility of the employment and training programs that the Federal Government has financed during the past quarter of a century have varied widely. It is easy to find allegations in the popular press that they have failed; on the other hand, there is fairly strong evidence in the studies done by scholars that at least some of the programs have been remarkably successful for some categories of participants.

One reason for the widely disparate views of the accomplishments of the employment and training programs lies in unrealistic expectations about their potential impact. With the declaration of the War on Poverty, programs of this kind for economically disadvantaged persons were probably oversold as a means of eradicating poverty by intervention in the labor market. This they have clearly not accomplished; nevertheless, as Burtless (1984) has observed:

> They have made a modest difference in the lives of many who participated in them. Our faith in manpower programs would be improved if policymakers, analysts, and the public at large developed a more realistic view of what these initiatives can accomplish. (p. 22)

Training Programs

Methodological difficulties that beset attempts to evaluate training programs are another problem that has stood in the way of confident conclusions about their efficacy (Borus 1979). For one thing, a complete benefit-cost analysis requires examination of a large number of outcome variables in addition to employment and earnings, many of which are difficult to measure and impossible to reduce to a common metric. Second, simple before-and-after measurements of a relevant variable such as earnings are unsatisfactory. For example, earnings may be expected to rise over time, even without training, as a result of maturation, a rising price level, and also because of the phenomenon of regression toward the mean among those at the bottom of the income distribution. Third, unless a study uses a truly experimental research design with random assignment to treatment and control groups, it is virtually impossible to be certain that a comparison between participants in a program and some reference group, no matter how carefully selected, will isolate the actual effects of the program. For example, what might appear to be an advantage created by the program may result simply from the fact that persons with above average initiative gained access to it.

On the basis of his review of some of the more sophisticated evaluations, Borus (1980) has concluded the following: training programs have tended to justify their costs; there is no evidence of differentials by race, gender, or age in the effectiveness of training; and short classroom training courses and programs with high completion rates are more likely than others to yield improvements in earnings.

On the basis of more recent (and probably better) evidence than was available to Borus, the General Accounting Office (GAO) (1982) has also concluded that CETA programs have benefited their participants, although their detailed findings differ from those of Borus. Specifically, the GAO noted that CETA participation increased the 1977 earnings of participants by an average of $300-$400—a 7 percent gain over the comparison group. Gains for women were found to exceed those for men, and persons whose pre-CETA earnings were very low experienced particularly marked improvement.

From an even more recent review of the evidence, Burtless (1984) concludes that classroom training for economically disadvantaged persons has significantly increased the earnings of women and persons with little or no work experience, that it has worked less well or not at all for men, and that its effect has been primarily one of more steady employment rather than one of improvement in the wage rate. Bassi (1983) has also found significant positive effects of CETA training programs on posttraining earnings, especially for women.

The training program for the disadvantaged that appears to cause the least disagreement about its value is also, paradoxically, the one that is most expensive—the Job Corps. At a cost of about $14,000 per training slot per year, which is more than 3 times the cost of other types of training, this "boarding school" approach to salvaging young men and women from deprived homes and neighborhoods has been found to more than pay for itself through higher wages and reduced crime (Burtless 1984). Its success has led Saks (1984) to recommend that the Job Corps be the "centerpiece of the employment and training system" for severely disadvantaged individuals and be "recognized as a laboratory for design elements throughout the system" (p. 62).

Probably the best evidence of the potential value of certain types of training programs for disadvantaged persons is that provided by the Supported Work Experiment—a transitional work experience program administered by the Manpower Demonstration Research Corporation with funding from private foundations and Federal agencies (Gueron 1980). The program involved over

10,000 individuals representing unemployed ex-convicts, former drug addicts, female welfare recipients, and young school dropouts who were employed in 15 locations over a 4-year period beginning in 1975. One of the unique features of this demonstration project was its experimental design: participants and members of the control groups were selected by random assignment.

The work environment was designed to emphasize peer support, close supervision, and a gradual increase in the demands placed upon the participants. Cost-benefit analyses showed that the effects of the program were clearly positive for only two of the four groups: the welfare recipients and the ex-addicts. In regard to these categories of participants, "society as a whole receives benefits in the form of useful goods and services, reduced criminal activity, and increases in future employment that are considerably in excess of program cost" (Gueron 1980, p. 8).

All of the existing evidence relating to the effect of training programs for economically disadvantaged individuals is derived from operations under the MDTA and CETA, because JTPA has not been in effect long enough for evaluations of its program outcomes to have been made. Many have held great hopes for the increased involvement of representatives of private industry in the planning and administration of the programs, especially in view of the acknowledged fact that most job opportunities are in the private sector. On the other hand, there has been the fear that the greater involvement of private industry would increase the likelihood of "creaming" in the selection of participants, with the result that more severely disadvantaged persons would not be as well served as they had been. Some basis for this fear had been found in a General Accounting Office (1983) study that compared the Private Sector Initiative Program with the more traditional training efforts under CETA.

There is more direct evidence of the validity of the fear of creaming in an assessment of operations under JTPA over the 9 months from October 1983 through June 1984, which was the transitional period established by the law. A study based on field or telephone interviews with JTPA State officials in all 50 States and with officials in 57 service delivery areas (SDAs) found that a large majority of the SDAs used low costs and the potential for high placement as the principal criteria in deciding on the types of programs to develop. As a consequence, the level of expenditures for such support services as literacy training, day care, and transportation was even lower than the JTPA allowed; placement rates were higher and costs were lower than Federal standards had suggested. Furthermore, substantial attempts were made by training agencies to select as participants those who were most job ready. These findings plus the brief duration of JTPA training (11 weeks for adults and 12 for youth) caused "concern that many of the participants would have gotten jobs without the benefit of JTPA" (Walker, Feldstein, and Solow 1985). Another study, while finding no support for "any simplistic notion of 'creaming'" concludes that "difficult-to-serve persons receive less attention than they did in the past" (Hunt et al. 1984, p. 91).

Public Service Employment and Work Experience Programs

Public service employment (PSE) and work experience programs (the distinction between them is not well defined) are less clearly instruments of human capital development than they are means of providing jobs to those who need them, although virtually all employment obviously includes a training component (cf. Burtless 1984). PSE was by far the most controversial aspect of CETA. It became predominant from the standpoint of its share of total expenditures and, in the popular mind, tended to become synonomous with CETA. The Reagan administration abolished PSE, and there is no provision for it in the JTPA.

Evidence concerning the effects of PSE on the subsequent earnings of participants is unclear. As far as employment effects are concerned, it seems likely that the programs have been more effective in redistributing employment opportunities in favor of disadvantaged clients than in substantially increasing the total number of jobs (Evanson 1984). Nevertheless, it must be noted that some economists, for example, Solow (1980), believe that PSE programs have some slight advantage even from the latter point of view over general monetary and fiscal stimulation of the economy. Solow points out that if PSE can be targeted on the intended beneficiaries and if it does not simply substitute for other employment, then it is the appropriate approach for combatting structural unemployment in an economy where inflationary pressures threaten. The most recent and most comprehensive evaluation of PSE concludes that it clearly deserves a place among the arsenal of weapons to combat unemployment and develop human capitol (Cook, Adams, and Rawlins 1985).

An Overall Assessment

It is not possible on the basis of available evidence to provide a succinct and definitive evaluation of Federal employment and training programs for economically disadvantaged persons, except to note that many such programs have clearly improved the lives of some of their participants and that some programs have had social benefits that have exceeded their costs. Perhaps the most relevant conclusion is that of Eli Ginzberg, a lifelong student of human resource policy and chairman of the National Commission for Employment Policy from its formation in 1973 until 1982. Acknowledging the limitations of data and analyses Ginzberg (1980) offers the following judgment of the role and potential of employment and training programs:

> An advanced economy such as the United States must continue to experiment with manpower policies and programs for the reason that it cannot rely solely on the self-corrective forces of the market to assure optimal employment opportunities . . .
>
> Once a democratic society becomes cognizant of gross inequities and inefficiencies, as it did in the 1960s, with respect to the long-term neglect of minorities and the poor, it does not have the luxury of turning its back on its newly acquired knowledge and insight. Response is imperative . . . political tensions and social unrest would have been much greater had the federal government not demonstrated a concern and had it failed to act. Manpower programs may have fallen far short of what was needed, but they surely were preferable to a policy of indifference and neglect. (pp. 186-87)

Programs for Dislocated Workers

As has been noted, the JTPA contains provisions (in title III) for the retraining of dislocated mainstream workers, who are defined as individuals (1) whose jobs have disappeared as the result of a permanent plant closure, (2) who are eligible for (or have exhausted) unemployment compensation benefits and have been laid off with little likelihood of returning to their previous occupation or industry, or (3) who are long-term unemployed with limited local reemployment opportunities in the same or a similar occupation.

During the 9-month period ending June 30, 1984, a total of 96,100 participants were enrolled in title III programs, which was less than 1/6 of the 615,500 enrollment in the programs for disadvantaged persons (Title IIA). Expenditures on the title III programs administered by SDAs amounted to $73.8 million, in contrast with the $879.2 million expended on title IIA programs. The difference

between the two categories of programs is reflected in the characteristics of their enrollees. Two-thirds of the participants in title III programs were male as compared with one-half of those in title IIA programs. Four-fifths of the former group but only three-fifths of the latter were high school graduates. Moreover, 95 percent of the dislocated workers were 22 years of age or older, in contrast with 61 percent of those in programs for economically disadvantaged individuals (U.S. Department of Labor 1984).

As noted in the first section of this paper, there are profound disagreements about the implications of current economic and technological trends for the prospective unemployment problem in the United States, and more specifically for the likely numbers of permanently displaced (dislocated) workers. Hearings before the Joint Economic Committee of Congress in 1983 (U.S. Congress 1983) generated estimates of the number of dislocated workers ranging between 100,000 (offered by Marc Bendick, Jr., of the Urban Institute [p. 3]), and 3 million (suggested somewhat more tentatively by Sheldon Friedman, director of the United Auto Workers' research department [p. 46]). The Congressional Budget Office has prepared estimates for January 1983 for a variety of definitions of dislocated workers. Depending on the definition used, the estimates ranged between 190,000 and 1.8 million (Baldwin and Donohue 1983). A Department of Labor survey conducted in January 1984 disclosed that between 1979 and 1983, 5.1 million workers with at least 3 years of service with their employers had lost their jobs because of plant closings or layoffs from which they had not been recalled. Of these, 1.3 million remained unemployed as of January 1984 (Flaim and Schaal 1985).

These differences of opinion about the likely severity of unemployment resulting from technological change or international competition obviously produce corresponding differences in the evaluation of existing arrangements for retraining mainstream workers. On the one hand, Bendick (1983) believes that the "funding of the Job Training Partnership Act's Title III at about $240 million per year seems approximately to cover the problem" and that "higher priority for expanded federal investment in employment and training programs . . . should be in Title II—that for disadvantaged workers" (p. 30). On the other hand, more pessimistic observers have, with varying degrees of specificity, called for a substantially increased effort directed at retraining displaced workers (Baldwin and Donohue 1983; Choate 1985; Dunlop 1983; Lovell 1984).

Quite aside from the magnitude of the displaced worker problem, there is reason to believe that inadequate attention is being paid to human capital development in the private sector and that the Federal Government can play a useful role in stimulating it (Bishop 1983; Carnevale 1983; Choate 1985). It is true that annual expenditures by private employers on employee training total about $60 billion per year; nevertheless, most of this is accounted for by large progressive firms exemplified by AT&T and IBM. In its recent newspaper and television advertisements, the latter company has highlighted the experience of a male employee who enjoyed four careers with the company. Hired in 1964 at the company's plant in Lexington, Kentucky, he was selected to participate in company training programs on 3 occasions over the next 21 years as technological changes eliminated his successive jobs as typewriter assembler, inspector, and manufacturing instructor. Today, IBM proudly announces that he "is a valued member of our electronic card assembly technical staff" (advertisement, *New York Times* 17 May 1985, p. A15).

Bishop (1983) suggests a variety of programs that might be used to mitigate the inherent tendency of most private employers to underinvest in the human capital of their employees, emphasizing particularly an arrangement that would be patterned after the French Mandate to Spend. This piece of legislation requires every French employer of 10 or more workers either to spend 1.1 percent of its total wage bill on retraining or to pay a tax equivalent to the difference between that amount and its actual training expenditures. The required expenditures may be made in the form

of outlays for the firm's own formal training programs, payments into a training insurance fund established by collective bargaining, or contributions to a government-approved training program for unemployed workers.

Despite his view that the displaced worker problem has been exaggerated, Bendick (1983) also believes that because of "private market failures" the amount of human capital investment by employers is below the socially optimal level, and he endorses the French system, among other "federal initiatives to attack the problem of long-run structural unemployment and simultaneously to enhance national productivity and international competitiveness" (p. 30).

CONCLUSION: POLICY CONSIDERATIONS

In previous sections of this paper, I have explored both the meaning and significance of human capital development, described the principal human capital development institutions and processes in the United States, and attempted to synthesize available evidence relating to the effectiveness of some of them. In this concluding section, I set forth the policy prescriptions to which the foregoing analysis leads me.*

Policy = Analysis + Value Judgments

The use of the first person singular pronoun in the preceding paragraph is a matter of necessity; it reflects the fact that policy recommendations can never emerge from research findings alone. Even when facts and analysis permit unambiguous answers to what the effects of particular programs are or will be (which, as we have seen, they rarely do), they do not tell us what courses of action are desirable or appropriate until they are blended with value judgments. What weights should be attached to the multiple goals of social policy—how much of one desirable objective should be sacrificed in order to achieve a given degree of another—are matters on which intelligent and informed women and men of good will can and do disagree. Nevertheless, one's views on these issues are as important as the results of scientific inquiry in making decisions on social policy.

It therefore seems appropriate to specify at the outset both the major *factual* or *analytical* conclusion to which the study has led me and the principal values relating to human capital development that underlie my policy choices. As to the former, using the broadest possible terms, I conclude that education and training can and do make substantial contributions to the economic welfare and general well-being of individuals as well as to the ability of a society to accomplish its complex of objectives. There are, to be sure, differentials in effectiveness among various types of programs and categories of participants, and there is also a gap between actual and potential effects. There is no question, however, that these forms of investment in human capital can yield significant benefits.

The major values underlying my policy choices are expressed in the following principles:

- Every one who wants to work should be guaranteed an opportunity to hold a job for which she or he is qualified.

- Individuals should have lifelong opportunities, beginning with the public school system, to prepare themselves for specific occupational roles, including the opportunity to change such roles as adults.

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*Well after the first draft of this paper had been written, the publication of *Investing in Our Children* (Committee for Economic Development 1985) was announced. There are numerous remarkable similarities between the policy recommendations contained in that volume and those made in this section, although they were developed completely independently. A substantial difference between the two relates to the issue of financing and the role of the Federal Government.

- To the extent possible, education and training opportunities ought to depend only on an individual's ability and motivation. More specifically, they ought not to depend on the characteristics of the family into which one happens to be born, upon gender, or upon the particular neighborhood, community, or State in which one happens to live. This principle is dictated not only by considerations of equity, but also in order to allow the Nation to exploit as fully as possible the talents of its people.

- The widest possible freedom of choice should be available in the labor market. This means, as a minimum, that all vacant jobs should be equally available to all who qualify for them. It also means that, through one's entire lifetime—but especially during youth when educational and occupational decisions are being made—there should be adequate information about alternatives to allow real choices to be made.

Improving Policy Choices: Finding Out What Works

Irrespective of values, a substantial impediment to confident prescriptions for human capital development policy is the extent of our ignorance of the relative effectiveness of possible alternatives. Although it has been 15 years since Alice Rivlin (1971) argued the need for more "systematic thinking for social action" in her Gaither Lectures at the University of California, the principal elements of her argument are as cogent today as they were then. It was Rivlin's study as a social scientist and, perhaps even more, her experience as Assistant Secretary for planning and evaluation in the Department of Health, Education, and Welfare, that led her to conclude that although research had made substantial contributions to understanding the nature, extent, and incidence of social problems in our society and the distribution of their benefits and costs among the populace it had made little progress "in comparing the benefits of different social action programs" or in allowing us to know "how to produce more effective health, education, and other social services" (p. 7).

Rivlin is pessimistic about ever being able to choose scientifically among alternative investments in human capital—curing cancer or teaching poor children to read, to use her example. Acknowledging the conceptual relevance of human capital theory, she recognizes the extreme difficulties of measuring both elements of a benefit-cost analysis, but is especially wary of attaching dollar values to the benefits:

> Once we leave the fairly firm ground of income we move into a kind of never-never land where we must set values on self reliance, freedom from fear, the joys of outdoor recreation, the pleasures of clean air, and so forth. . . . Even if we could compare the benefits of social action programs in commensurable terms, we would be left with the problem that different programs benefit different people. (p. 57)

As a consequence, choices among alternative social action programs will inevitably be made politically rather than analytically,

> for politicians and their constituents have strong intuitive ideas about the relative importance of health, education, and social well-being that are not likely to be shaken by benefit-cost estimates. (p. 59)

Even though deciding which social objectives to pursue cannot be done scientifically, the same is not true of decisions about how to pursue a given objective most effectively. Rivlin argues that education and other social services are not now produced as effectively as they might be and

that they could be improved if only we knew what works and what does not. In the following passage Rivlin suggests that there is a reliable means of finding out, namely, "systematic experimentation":

> The innovation should be tried in enough places to establish its capacity to make a difference and the conditions under which it works best. There should be controls to make the new method comparable with the old method or with no action at all. In other words, the conditions of scientific experiments should be realized as nearly as possible. (p. 91)

For reasons that have been made clear in the introductory section of this paper, I share Rivlin's skepticism about the potential contribution of benefit-cost studies in choosing among alternative forms of investment in human capital and would indeed be inclined to state the case even more strongly than she does. I also enthusiastically join her in pleading for the kind of systematic experimentation that she describes. Investment in this kind of research is likely to have a more substantial long-run payoff than any other single recommendation. The evidence reviewed in the preceding section is eloquent testimony that such experimental studies are needed. With a few notable exceptions (for example, the Perry Preschool Project and the Supported Work Experiment), studies that have attempted to assess the effectiveness of specific education or training programs have not used randomly assigned treatment and control groups. Even worse, a large majority of the literally hundreds of evaluations that have been made of MDTA and CETA programs have not involved control groups of any kind.

I am aware of the view that conventional scientific method may be ill suited to important issues in social research in general and educational research in particular (Argyris 1980; Lincoln and Guba 1985; Sanders 1981). Nevertheless, I believe that controlled experiments hold greater promise than other approaches, even if they are viewed and written up as case studies (Lincoln and Guba 1985). It would of course be naive to expect a research program of this kind to provide easy, permanent, and definitive answers to all relevant questions. For one thing, as Rivlin points out, such research is, under any circumstances, difficult to organize and execute; moreover, existing institutional arrangements—especially in education—militate against it (Rivlin 1971). The questions change continuously as new problems are perceived and new ideas for meeting old problems are developed. Finally, even careful experimental designs are not likely to eliminate completely differences of interpretation and different conclusions about what works best, as *"Sesame Street" Revisited* (Cook et al. 1975) attests. Nevertheless, the potential payoff appears to be great; although experimental studies will not settle all questions, they are nonetheless a prerequisite to confident policy prescription. Legitimate concerns exist, to be sure, for the ethical and legal issues that arise in such experimentation, but these can, at least to my satisfaction, be resolved (Boruch and Cecil 1983; Rivlin and Timpane 1975).

Increasing the Flexibility of Human Resources

In the meantime, existing evidence provides an adequate basis for recommending several directions that human capital development policy should take. In thinking about these issues, we need to differentiate between long- and short-term human capital development programs. To a considerable extent (although not entirely), this is another way of distinguishing between preventive and remedial programs. The goal of social policy should be to strengthen the former in order to minimize reliance on the latter.

This is clearly a very broad prescription; it embraces, for example, the improvement of teaching reading in elementary schools so as to reduce the problem of adult illiteracy and, indeed,

strengthening public education in every respect—a matter to which I return later. There is one important element of the prescription, however, that deserves special emphasis. In view of the rapid pace of technological change and its obvious effects on the structure of employment opportunities, the educational system ought to concentrate on building as much flexibility as possible into the human agents of production and ought to leave to employing establishments a greater responsibility for developing specific job skills.

It is easier to say this than it is to indicate precisely what it means and how it is to be accomplished. One of the more obvious implications of the recommendation is that increased attention be paid in the schools to developing communication and computational skills and to providing a basic understanding of the scientific method and the elementary principles of natural and social science. Perhaps an even more important implication is that all curricula and courses be planned with a conscious view toward developing a creative problem-solving ability among students. In this respect, Brandt (1984) has noted the following:

> Good teachers have always tried—with varying success—to teach *for* thinking: to teach academic content in a way that strengthens students' cognitive abilities. But some programs are now designed for teaching *of* thinking: deliberate attention to particular mental skills as the primary aim of instruction. . . . There is also increasing interest in teaching *about* thinking: helping students become more conscious of their own mental processes. Capable problem solvers possess metacognitive skills: they know what they know and what they need to know: they can monitor their own thinking. (p. 3)

There are, to be sure, differences of opinion about the best way to inculcate these skills (cf. de Bono 1984; Lipman 1984; Paul 1984; Perkins 1984; Sternberg 1984), but there is enough evidence to "reinforce the conviction that the goal is a reasonable one and that progress is being made in its pursuit" (Nickerson 1984, p. 36). Achievement of the goal would clearly lead not only to more effective and more flexible human capital, but also to the more effective performance of all the other roles that human beings play—an outcome that is, in my view, even more important.

Expanding Compensatory Preschool Education

Another preventive measure that should be strengthened and expanded is the Head Start program. This may seem to be a contradiction in terms, since Head Start is obviously a remedial measure. However, because it is designed to compensate for the economic and cultural deprivation of substantial numbers of youngsters that stems from deep-seated societal problems rather than from deficiencies in the educational and training system, it *is* a preventive measure. This view of the program is supported by rather clear evidence that Head Start youngsters are more successful in the regular educational system than they would have been in the absence of participation in the program.

It is true that Head Start has not eliminated the disparity in achievement between participants and the rest of the school population, however, no one should rationally expect a 1-year preschool program to have done that. Head Start has, however, demonstrated the effectiveness of compensatory preschool programs not only in improving subsequent educational experience but in contributing to the health, emotional maturity, and quality of family life of the participants. Despite this evidence, at present levels of financing, Head Start can handle only a small minority of the children who are eligible for it. A substantial expansion of the program would seem to be a desirable investment in human capital.

Improving the Process and Outcomes of Public Education

As has been mentioned, the objective of giving greater weight to preventive programs in order to minimize the need for remedial ones argues for a general strengthening of primary and secondary public education. Again, it takes less imagination and courage to recommend this as a goal than to describe the specific policies through which such a recommendation can be implemented. Peterson (1983) is surely correct in pointing out that some of the recommendations for educational reform (for example, better discipline) suffer from the fact that "no one has written any reliable recipes for producing the desired results" (p. 6). It is precisely to fill this gap that the experimental studies that have previously been suggested are important.

But some of the specific policies required to improve the educational system are crystal clear. There is incontrovertible evidence, for example, that in comparison with individuals entering non-teaching professions, persons intending to become teachers have, on average, demonstrated substantially lesser abilities in precisely those areas that the educational system is designed to address (Supra, p. 42). Evidence also indicates that young, qualified teachers are leaving the profession for higher paying jobs and that the new recruits are less academically qualified than those who are leaving (Darling-Hammond 1984).

One must hasten to add the obvious admonition that none of this means that all teachers are incompetent; both common sense and casual observation indicate that many teachers are not only dedicated, but perform their functions superbly. Nevertheless, the data strongly suggest that there are also many whose replacement by more competent persons would enhance the quality of the system. A number of strategies for attracting and retaining more highly qualified teachers have been suggested. Increasing salaries is an obvious necessity, and this has already begun to occur. However, according to National Education Association figures, the average salary in the 1984-85 school year was only $23,500, and there were wide variations within the continental United States, ranging from $16,000 in Mississippi and $18,500 in New Hampshire to $28,000 in Michigan and $29,000 in New York (Friendly 1985c). Forgivable loans covering college expenses for talented individuals who enter the profession are another approach that should become more widespread (Darling-Hammond 1984). Salary differentials based on merit, as well as differentials by subject-matter area that are consistent with those prevailing in the labor market, are additional means of mitigating the twin problems of recruitment and retention.

The other side of the coin of raising the quality of teaching is to minimize the number of unqualified teachers both by preventing their entry into the profession and by weeding out the unqualified individuals who are already there. Entry-level certification examination is a desirable means of accomplishing the first of these objectives. Periodic examination for the retention of certification raises admittedly knotty issues of equity; however, in my judgment, it is justified and desirable if accompanied by opportunities for remediation and by programs assisting the reemployment of those who are forced out of teaching. Arkansas has instituted such a program, and Texas and Georgia have adopted test requirements for experienced teachers that will become effective in 1986 (Maeroff 1985a).

Attacking the problem of teaching quality is simultaneously the most difficult and the most important approach to strengthening the educational system. Nevertheless, other recommendations made by the National Commission on Excellence in Education relating to the duration of schooling, curriculum reform, and requirements for graduation (see the section on Primary and Secondary Education) are relatively straightforward and, in my view, worthy of implementation. A number of States have already taken action along these lines, but considerable variation remains (Johnson 1985).

Unless experimentation can eliminate the substantial doubts about the effects of generalized voucher and tuition tax credit plans, these more radical proposals for educational reform ought to continue to be rejected. Levin (1983) has pointed out the inherent conflict between two desirable goals of educational policy: (1) the provision of a common educational experience in the interest of perpetuating a democratic society and (2) according freedom of choice to individual students and their parents. He nevertheless suggests a variety of ways in which the range of private choice can be extended without sacrificing the common educational core: (1) open enrollment within and between school districts, with the district of residence paying the other district the marginal per-pupil cost of education; (2) choice among schools with different specialties within a district; (3) "minischools" within the same establishment, each offering a different specialty; (4) "mini-vouchers," that is, certificates that can be used either within or outside the public school system for specified types of educational services (for example, computer programming or creative writing); and (5) use of private contractors who would compete with the public schools in teaching certain subjects and would be paid on the basis of results achieved. Approaches of these kinds would appear to be desirable.

Increasing the Federal Role in Primary and Secondary Education

As pointed out in the preceding section, the trend over the past 5 years has been in the direction of a reduction rather than an increase in the Federal role in public education—a trend that has also prevailed in the provision of other social services (Parnes 1984). Acknowledging the forces that are unlikely to allow a substantial reversal of that trend in the near future (Clark, Astuto, and Rooney 1983), I nevertheless lament the trend and believe that the improvements in public education that are almost universally desired are more likely to occur in the presence of a more active Federal involvement.

There are at least three reasons why a greater Federal role in public education is desirable. First, the necessary reforms, especially those relating to the improvement of teaching, are admittedly very costly (Peterson 1983), and it is highly doubtful that States and communities will be uniformly able and willing to implement them. Second, aside from cost, Federal standards are almost certainly necessary if there is to be any uniformity among the States. In this context, incidentally, there is good reason to wish for uniform National instruments to test the teachers. Third, to attain any level of excellence, it would be desirable to reduce the disparities that currently exist among school districts and among States with respect to the amount of resources that are devoted to education. The school finance reform movement that was initiated in the 1970s to reduce intrastate variation in educational resources has not substantially narrowed the gap between the richest and poorest districts, to say nothing of interstate disparities (Friendly 1985a). Breneman and Nelson (1980) appear to be correct when they observe that although these expenditure disparities have been held not to violate the Constitution, "the federal government still has a legitimate interest in policies that advance equal educational opportunity" (p. 216).

The three objectives outlined in the preceding paragraph all fall within the realm of what is currently regarded to be general support for primary and secondary education—a realm into which the Federal Government has hitherto not entered. Yet, it requires little or no straining of language to subsume all three of them under the four purposes that have come to be regarded as the legitimate concern of Federal aid to education: (1) promoting equal educational opportunity, (2) stimulating educational reforms, (3) supporting educational research, and (4) promoting educational preparation for employment (Timpane 1978).

In any case, the philosophical proposition that education is the natural province of the States and localities rather than the Federal Government is patently without merit. While it is true that education must be adapted to local needs and values, there is also a strong *National* interest in education that stems from at least two considerations. The more obvious of these is that the quality of education affects the degree to which National objectives can be achieved—objectives ranging from defense to enlightened citizenship and the elimination of discrimination. Moreover, even if only local objectives and values were important, extensive geographic mobility makes it necessary for all of us to be concerned about the quality of education in other jurisdictions, a concern that can be implemented only through National action. In 1970, over 2/5 of the population 25 years of age and older lived in a State other than the one in which they had been born (U.S. Bureau of the Census 1973, table 1). Surely, I cannot be expected to be disinterested in the education of a resident in another community or State without some assurance that the individual will not become my next-door neighbor.

Expanding Employment and Training Programs

No matter how effective the formal educational system may become, employment and training programs will always be needed as remedial instruments and as a means of training mainstream workers whose skills have for one reason or another become obsolete. Under current conditions, the need is far greater than current levels of funding can accommodate, and such programs should be expanded. In this context, the kind of experimentation that has been advocated in this paper is particularly important for identifying the specific types of programs most likely to benefit different categories of participants.

Substantial evidence has already demonstrated the effectiveness of some specific programs. An example is the Job Corps, which, although admittedly expensive, has been shown to salvage human resources that as the result of extreme deprivation would otherwise have been lost. This evidence and the political pressures that it has generated have apparently been sufficient to cause the Administration to abandon its earlier intention to cut and ultimately discontinue the program. The Job Corps is clearly worthy of retention and, indeed, expansion. As Saks (1984) has suggested, the Job Corps "should be recognized as a laboratory for design elements throughout the employment and training system" (p. 62). Specifically, he recommends exploration of "how elements of the Job Corps program might be used in less expensive programs of a nonresidential character" (p. 62). The Supported Work Experiment also provides sufficient evidence that carefully designed work experience programs have substantial payoffs, at least for some categories of participants, such as welfare mothers. These types of programs also deserve to be expanded.

General work experience or employment programs (the distinction between the two is fuzzy) are admittedly more difficult to espouse purely as a means of developing human capital; nevertheless, I would strongly recommend that public service employment (PSE) programs be reintroduced as one of the elements in the arsenal of weapons designed to combat unemployment, especially if we are once again confronted with the simultaneous threats of high unemployment and unacceptable levels of inflation. If properly targeted, public service jobs can absorb more unemployed persons with less inflationary pressure than can general stimulative policies alone. Moreover, such programs are virtually the only sure method of providing jobs for the most seriously disadvantaged among the unemployed. Finally, if carefully designed, PSE can contribute to the fulfillment of a multitude of unmet social needs.

Quite aside from remedial programs for disadvantaged individuals, there is need for larger investments than are currently being made in the human capital of mainstream workers. Irrespective of how successful we are in creating flexible human resources via the educational system, the

requirements of a dynamic economy will dictate that workers continuously acquire new skills. Although the more pessimistic estimates and forecasts concerning displaced workers seem to be unrealistically high, even the more realistic ones are greater than what can be accommodated under title III of the JTPA. Moreover, it is inadvisable to defer training until displacement has occurred; the experience of some large firms in industries characterized by rapid technological change indicates that training programs for current employees can prevent displacement. Finally, even in the absence of the threat of displacement, training opportunities for employed workers are necessary if we are to achieve the goal of allowing workers to make career changes.

Each of these reasons implies a need for a policy that will lead to increased investments by employers in the human capital of their work forces. Some experimentation with alternative methods for accomplishing this would be desirable. An approach that seems to hold promise is that which the French have adopted—an obligatory level of investment by each firm above a specified size, with a compensatory tax equal to the difference between the mandated and actual level of expenditures.

Attaining Efficiency and Equity in Social Policy

This paper has focused on human capital development, and much of its emphasis has been on investment in human capital as a means of creating a healthier and more efficient economy. At the same time, I have pointed to the contributions that human capital investment makes to the noneconomic goals of the society and to both the economic and psychological well-being of the individual. There is another way of saying this. Although efficiency and equity are frequently competing goals of social policy in the sense that we can have more of one only at the expense of foregoing some of the other (Okun 1975), they do not always collide. Sometimes a given social policy (for example, the elimination or reduction of labor market discrimination) permits us to have more of both. I perceive this happy state of affairs as prevailing with respect to most of the recommendations that I have made. In other words, the policies that I have suggested appeal to me not only because they will contribute to economic growth and a healthier and more dynamic economy, but because they will at the same time reinforce a trend begun at least half a century ago—but interrupted during the past 5 years—toward a more humane and equitable society.

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